

Remarks

Claim 1 has been amended. Claims 7-9 have been added and are directed to a method of using 1,3-propanediol as a fuel cell engine coolant. Claims 1, and 3-9 are pending in this application.

In the Office Action of January 12, 2005 claims 1, 3 and 6 were rejected under 35 USC §102(b) as being anticipated by Fitzpatrick et al (U.S. Patent No. 4,617,490).

Applicants respectfully traverse the rejection.

Claim 1, as amended, provides a nontoxic fuel cell coolant which is comprised of 1,3-propanediol and which has an electrical resistivity of greater than 250 kOhm-cm, a boiling point of greater than 90°C, a thermal conductivity of greater than 0.4 W/m-k, a viscosity of less than 1 cPs at 80°C, a viscosity of less than 6 cPs at 0°C, a heat capacity of greater than 3 kJ/kg-K, and which is compatible with current fuel cell cooling system materials. Claims 3 and 6 depend from claim 1.

Fitzpatrick et al. provide a light filtering solution containing cinnamaldehyde or cinnamyl alcohol in a solvent composed of water and an aliphatic alcohol, which may comprise from 20% to 80% of the weight of the solvent. The solvent may utilize 1,3-propanediol as the alcohol in the solvent. The cinnamaldehyde or cinnamyl alcohol is present in the solution within the range of 62% saturation to saturation.

Claim 1, and its dependent claims 3 and 6 are novel over Fitzpatrick et al. because Fitzpatrick does not disclose a fuel cell coolant, but rather, discloses a light filtering solution. The light filtering solution may cool a cathode ray tube in a color projection display, but it is not disclosed as a fuel cell coolant.

Claim 1, and its dependent claims 3 and 6, are also novel over Fitzpatrick et al. because Fitzpatrick does not disclose a fuel cell coolant that is compatible with current fuel cell cooling system materials. As set out on page 6, lines 4-6, of the specification coolants that have material compatibility with cooling system materials will not corrode or erode current automotive cooling system materials. Cinnamyl alcohol and cinnamaldehyde are compounds that are highly susceptible to oxidation, particularly under conditions that would be encountered in a fuel cell, and the oxidation products are highly likely to be corrosive to current cooling system materials. As such, the light

filtering solution containing cinnamyl alcohol or cinnemaldehyde disclosed by Fitzpatrick et al. is not compatible with current fuel cell cooling system materials.

In the Office Action of January 12, 2005, claims 4 and 5 were rejected under 35 USC §103(a) as being unpatentable over Fitzpatrick et al. (U.S. Patent No. 4,617,490) as relied upon for its teaching of 1,3-propanediol as 20% to 80% of the light filtering solution solvent. Applicants respectfully traverse the rejection.


Claim 4 provides the fuel cell engine coolant of claim 1 in which the solution is comprised of from 40 to 85% by volume of 1,3-propanediol. Claim 5 provides the fuel cell engine coolant of claim 4 in which the solution is comprised of from 55 to 85% by volume of 1,3-propanediol.

Claim 4 and claim 5 are not obvious in light of Fitzpatrick because one skilled in the art would not look to use a light filtering solution for a cathode ray tube as a fuel cell engine coolant, particularly when the light filtering solution specifically incorporates compounds that are highly likely not to be compatible with current fuel cell cooling system materials such as cinnemyl alcohol and cinnemaldehyde.

In light of the above, Applicants respectfully request allowance of the pending claims.

Respectfully submitted,
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